

CLAIMS

1) A railway beacon designed for laying along a railway line and comprising:

5 - a casing (3) supporting at least one electronic circuit (4), which receives an electromagnetic enabling signal from a vehicle travelling along the railway line, and generates a coded response signal (telegram) transmitted to the vehicle and containing information
10 relative to travel of the vehicle; and

 - a receiving antenna and a transmitting antenna (42, 44), both carried by said casing (3) and cooperating with said electronic circuit (4);

characterized in that said casing (3) is formed in
15 one piece from insulating material; said casing (3) having at least one sunken seat (12a) housing at least one printed circuit (38) defining said electronic circuit (4); said sunken seat (12a) being filled with solidified insulating resin (40) embedding said printed
20 circuit (38) and the electronic components (33) on the printed circuit (38); and said insulating resin (40) containing no air, in particular no air bubbles, and comprising no water in its composition.

2) A beacon as claimed in Claim 1, wherein said
25 receiving antenna and said transmitting antenna (42, 44) are co-molded with said casing (3).

3) A beacon as claimed in Claim 1, wherein said

receiving antenna and said transmitting antenna (42, 44) comprise a supporting structure (50) defined by a number of elongated printed circuits (52a, 52b, 52c, 52d) communicating electrically with one another and forming
5 a frame structure; each elongated printed circuit (52) comprising first conducting tracks (55) connected to respective first conducting tracks (55) of the other elongated printed circuits (52) to form, as a whole, said receiving antenna (42); and

10 each elongated printed circuit (52) also comprising second conducting tracks (56) connected to respective second conducting tracks (56) of the other elongated printed circuits (52) to form, as a whole, said transmitting antenna (44).

15 4) A beacon as claimed in Claim 3, wherein adjacent said elongated printed circuits (52) are connected mechanically and electrically by L-shaped arcs (54) of conducting wire extending between adjacent end portions of said elongated printed circuits (52).

20 5) A beacon as claimed in Claim 1, wherein said casing is in the form of a parallelepiped-shaped plate.

6) A beacon as claimed in Claim 1, wherein said sunken seat (12a) is parallelepiped-shaped.

7) A beacon as claimed in Claim 1, wherein said
25 sunken seat (12a) is closed by a flat plate (22) positioned with its peripheral edges (22a) resting along an annular edge (20) of the sunken seat to close said

sunken seat (12a) in fluidtight manner.

8) A method of producing a railway beacon,
characterized by comprising the steps of:

- producing (70, 70a, 70b) a casing (3) made of
5 insulating material and having at least one sunken seat
(12a);

- inserting an electronic circuit (4), formed on at
least one support (38), in particular a printed circuit,
inside said sunken seat (12a); said electronic circuit
10 (4) receiving an electromagnetic enabling signal from a
vehicle travelling along a railway line, and generating
a coded response signal (telegram) transmitted to the
vehicle and containing information relative to travel of
the vehicle;

15 - producing (component A, component B) a resin (40)
containing substantially no water particles or air;

- feeding said resin (40) inside said sunken seat
(12a), so as to embed said support and the components on
said support inside said resin, and allowing the resin
20 to set to obtain a stable position of said electronic
circuit (4) inside said casing (3).

9) A method as claimed in Claim 8, wherein said
step of producing a casing is performed by injecting,
into a cavity (72) of a mold (70) complementary in shape
25 to said casing (3), a mixture of heat-setting materials
containing a predetermined quantity of glass fibre.

10) A method as claimed in Claim 8, wherein the

outer surfaces of said casing (3) are coated with an insulating layer of gel-coat (74).

11) A method as claimed in Claim 8, wherein said step of feeding said resin comprises the steps of:

- 5 - placing a nozzle (77) close to a bottom wall (15) of said sunken seat, so that the poured resin (40) covers said bottom wall (15), contacts a bottom face (38a) of said support (38), and eventually covers a top face (38b) of said support;
- 10 - moving said nozzle into a position close to the larger components on said support (38), and pouring the resin so as to expel any air beneath and/or inside said components;
- continuing to pour said resin (40) to fill said
15 sunken seat (12a); and
- allowing the poured resin (40) to set hard.

12) A method as claimed in Claim 11, wherein, during pouring, said nozzle (77) is located, inside said sunken seat (12a), on the opposite side to a through
20 connector (26) extending between said sunken seat (12a) and a further sunken seat (12b) adjacent to it.